PREOPERATIVE MEDICATION*

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PROGRESS in the development of anesthetic agents and methods has been so paralleled by the advance in pharmacology that it may fairly be said to depend upon it, and in no way has this been so marked as in the adaptation of the newer hypnotics. The addition of the barbiturates and tribromethanol to the previously known narcotics, such as the opium derivatives and scopolamin, have helped immeasurably in providing an escape from the depressing effect of fear and in bringing the patient to the operating table in the best possible physiological and psychological condition.

Preoperative medication has come to mean something more than the traditional hypodermic injection of morphin and atropin. The apprehensive patient is now insured a restful night by one or other of the hypnotic drugs. Prevention of dehydration by the administration of fluid, preoperatively or by hypodermoclysis, is routine treatment. An hour before the operation, sodium amytal, avertin or one of the opium derivatives, combined with scopolamin, in dosage suited to individual reactions of blood pressure, metabolic rate, age, weight, etc., given in the room or ward, depresses the nervous system sufficiently to produce unconsciousness or at least indifference to the sights and sounds of transportation or to a possible long period of waiting in the surgery.

Adaptation of the anesthetic to the individual patient and the operative procedure is so important that its selection should be not only the prerogative but the responsibility of the anesthetist.

This is equally true of the preanesthetic medication, and not until the assistance of the anesthetist is sought by surgeon and internist in selecting not only the anesthetic but the preliminary hypnotic will the best results be obtained. Success or failure of the anesthesia is largely dependent upon the preoperative medication, and the evils of routine dosage are often responsible for postoperative morbidity.

Some years ago when much attention was being paid to the so-called dangers of light anesthesia, Gatch and Mann proved conclusively that operative shock was often due to an anesthesia deep enough to permit, through lowering of muscular tone, the determination of blood to the valveless veins of the splanchnic area and a consequent brain anemia.

The necessity of maintaining as deep muscular relaxation, consistent with safety, as the particular surgeon requires, is a problem in every anesthesia and many factors other than the amount of the anesthetic agent enter into its solution.

In certain surgical procedures, such as mastoidectomies, thyroidectomies, and many orthopedic operations, muscular reflexes are not produced by the surgeon's manipulations and the light anesthesia of gas is sufficient, provided an efficient preliminary hypnotic is used.

Crile, in his work on anoci-association, describes local anesthetics as protecting the brain from the effects of local operative injury but not against destructive psychic strain, while inhalation anesthetics exclude the psychic stimulation of the brain cells, but do not exclude the operative stimulation.

BALANCED ANESTHESIA AND SELECTION OF HYPNOTICS

The method of not relying upon one agent to produce and maintain surgical narcosis has been aptly called balanced anesthesia.

The selection and combination of hypnotics and anesthetics must vary with the individual condition.

The use of *atropin* in combination with morphin was based on the tradition that still maintains, that being the physiologic antagonist of morphin, it provides a safety factor. It stimulates respiration, accelerates the heart and increases the metabolic rate. This respiratory action is a disadvantage in modern gas anesthesia, and now that carbon dioxid is available in all well-equipped operating rooms, respiratory depression can be immediately overcome.

The giving of atropin in small doses to children who are considered to be under the age where morphin may be safely administered is to be condemned and, except with deep ether anesthesia, its use with morphin is unnecessary.

Scopolamin, having fallen into disrepute because of reports of respiratory depression undoubtedly due to deterioration from age, is again proving its value in allaying fear and aiding rather than antagonizing the action of morphin or pantopon in decreasing muscular irritability and has a greater margin of safety than the barbiturates or avertin in that it does not depress blood pressure.

Better results are obtained by giving a full dose of 1/200 to 1/100 of a grain of scopolamin three-fourths or half an hour before operation, rather than in divided doses, beginning an hour and a half before, with the dosage modified by the respiratory rate response. If the rate drops following the first dose, the second is omitted and the effect is lost by the time of operation, whereas, if the interval is shortened the respiratory depression, if any, comes during the anesthesia, when stimulation with carbon dioxid or ether are available. A safe, controllable, respiratory depressant has long been needed in anesthesia. In upper abdominal surgery the hampering of the surgeon's manipulations is as often the result of exaggerated respiratory movements as of too light anesthesia. *Ethylene* promised to fill this need, but its depressant effect on respiration is so rapid

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and deep as to constitute its chief disadvantage, and there have probably been more fatalities due to this cause than to its explosiveness.

In order to compare the results of the oral administration of *sodium amytal* with the intravenous, thirty patients, ranging from ten to sixty-eight years, were given it by mouth in doses of five to fifteen grains one hour before operation. The minimum dose was used as no attempt was made to produce anesthesia, the drug being evaluated as a hypnotic only and nitrous oxid used for the anesthesia. The addition of a small amount of ether was necessary in three cases. This series is too small to permit any definite conclusion, but sufficient to show that oral administration is equally efficient and less objectionable, from a psychic standpoint, than the intravenous method. The possible safeguard of estimating dosage by noting blood pressure fall during intravenous administration is not entirely reliable, as frequently the drop comes several hours later. In all but three patients there was a fall in blood pressure of from ten to thirty degrees. One patient, with a preoperative systolic pressure of ninety, showed no depression during the operation, but five hours later had a drop of twenty-five degrees with respiratory depression and cyanosis which, however, responded promptly to ephedrin and caffein. Two patients were difficult to control for several hours postoperatively, and one exhibited mental confusion for two days. An acceleration of the pulse rate was noted in several cases which persisted for two or three days, but this was not constant and might easily have been due to other factors.

In all but two patients, one of whom had apparently acquired a tolerance from previous use of amytal, sleep supervened in five to ten minutes. Four patients received one-eighth to one-fourth morphin in addition. It was noticed that there was some postoperative nausea in these cases and that where morphin was omitted nausea occurred in but one patient.

The conclusions reached from this series was that the barbiturates have a definite field as hypnotics; that they compare favorably with the combinations of opium derivatives and scopolamin; but that, as the lethal dose in man has not yet been determined, their use as anesthetics is not safe.

There has not been as yet a sufficient number of cases reported from which to judge the comparative merits of the barbiturate group and tribromethanol, but a few definite conclusions may be made.

Their hypnotic effect is about the same. There are no morbid after-effects in blood or urine excretion. Nausea is rare with either drug. Their depressant action on respiration is about the same, but is not sufficient to be an objection. They both depress blood pressure, sodium amytal somewhat more than avertin.

All of the arguments in favor of their psychic value as a preliminary to inhalation anesthesia have double force when the anesthesia used is spinal. In this form of anesthesia there is a greater need to allay the fears of the patient than in any other. Finally, the barbiturates have been proven to decrease the toxicity of the cocain derivatives.

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KEINBOCK'S DISEASE*

COMPRESSION OSTEITIS OF SEMILUNAR OR LUNATE BONE OF THE WRIST

REPORT OF CASES

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A RADIOGRAPHIC interpretation of an osteitis of the lunate or semilunar bone of the wrist joint was made by Keinbock [1] in 1910. Kellogg Speed [2] in his book published in 1916 refers to the same lesion of the wrist joint and calls it Keinbock's disease. Speed was of the opinion that the condition was a fracture of the semilunar with fragmentation rather than a true osteitis.

Mark Rogers [3] of Boston gave a very excellent description of this same condition in 1922, reviewed seven cases reported by Preiser in 1910, and five cases reported by Guie in 1916. His observation was based upon five cases and called special attention to the resemblance the lesion had to Kohler's disease of the tarsal scaphoid and to Kummel's disease of the vertebral bodies. He believed the lesion to be an osteitis, the result of a trauma.

Erich Soupe [4] in 1923 reviewed fifty cases of the same lesion, twenty reported by Becker; sixteen by Keinbock; seven by Guie; six by Finister, and added one additional case. Ralph Goldsmith [5] in 1925 added one case and reviewed Soupe's group. R. Fontaine [6] in 1925 reported one additional case and reviewed a case reported by Mueller not previously mentioned by other writers. Mueller's case was later referred to by Henderson [7] in an article on Keinbock's disease in which he added two case reports. Roscoe Webb [8] reported one case in 1926 and H. D. Sonnenschein [9] reported a case in 1927.

In all it would appear that about seventy cases have been reported, making it seem that the lesion was comparatively rare. It is our contention that the occurrence is much greater, but that unrecognized cases are far greater than the reported.

ETIOLOGY

The ratio of incidence, according to Soupe, is seven to one in favor of men. The right wrist

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